1. (Amended) A filtering method for transforming an input digital signal into one or more output digital signals having even-indexed samples and odd-indexed samples , said method including at least one iteration comprising the steps of:

modifying the even-indexed samples by a function of weighted odd-indexed samples; and

modifying the odd-indexed samples by a function of weighted even-indexed samples,

wherein the weighted samples are obtained by at least one weighting operation applied to a difference between two consecutive even-indexed samples.

2. (Amended) A filtering method according to Claim 1, wherein said step of modifying the odd-indexed samples is performed after said step of modifying the even-indexed samples.

3. (Amended) A filtering method according to Claim 1 or 2, wherein said iteration further comprises:

weighting, by a first weighting coefficient, at least one odd-indexed sample adjacent to an even-indexed sample currently being modified, so as to obtain a weighted odd-indexed sample;

modifying at least one even-indexed sample using the at least one weighted odd-indexed sample;

weighting, by a second weighting coefficient, even-indexed samples adjacent to an odd-indexed sample currently being modified, so as to obtain weighted even-indexed samples; and

modifying at least one odd-indexed sample using at least one weighted even-indexed sample.

4. (Amended) A filtering method according to Claim 3, wherein the second weighting coefficient is a function of the first weighting coefficient.

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5. (Amended) A filtering method according to Claim 4, wherein the second weighting coefficient is a function of the first weighting coefficient as follows:

$$\beta_{0,j} = m_j / \left(1 - 2 \sum_{i=0}^{j} \alpha_{0,j} \right)$$

where $\alpha_{0,j}$ designates the first weighting coefficient, $\beta_{0,j}$ designates the second weighting coefficient, i and j are integers, m_j is a value defined by a recurrence $m_0=(-1)^{L_0}$ and $m_j=-m_{j-1}$, and L_0 is a predetermined integer.

6. (Amended) A filtering method according to Claim 1, wherein at each iteration, an odd-indexed sample adjacent to an even sample currently being modified is alternately a sample of rank immediately below or immediately above the adjacent even sample.

7. (Amended) A filtering method according to Claim 1, further comprising, at the end of said iteration, an additional step of filtering that includes weighting by a third weighting coefficient.

8. (Amended) A filtering method according to Claim 7, wherein the third weighting coefficient is a function of the weighting coefficient used in the preceding step, as follows:

$$\gamma = -1 / \left(2\beta_{0,L_0-1}\right)$$

where γ designates the third weighting coefficient, L_0 is a predetermined parameter and β_{0,L_0-1} designates the weighting coefficient used in the preceding step.

9. (Amended) A filtering method according to Claim 1, wherein the digital input signal represents an image.

10. (Amended) A filtering method for transforming one or more input digital signals into an output digital signal, the input signals including even-indexed samples and odd-indexed samples, said method including at least one iteration comprising the steps of:

modifying odd-indexed samples by a function of weighted even-indexed samples; and

modifying even-indexed samples by a function of weighted odd-indexed samples,

wherein the weighted samples are obtained by at least one weighting operation applied to a difference between two consecutive even-indexed samples.

11. (Amended) A filtering method according to Claim 10, wherein said step of modifying even-indexed samples is performed after said step of modifying odd-indexed samples.

12. (Amended) A filtering method according to Claim 10 or 11, wherein said iteration further comprises steps of:

weighting, by a first weighting coefficient, even-indexed samples adjacent to an odd sample currently being modified, so as to obtain weighted even-indexed samples;

modifying at least one odd-indexed sample using at least one weighted even-indexed sample;

weighting, by a second coefficient, at least one odd-indexed sample adjacent to an even sample currently being modified, so as to obtain a weighted odd-indexed sample; and

modifying at least one even-indexed sample using at least one weighted odd-indexed sample.

13. (Amended) A filtering method according to Claim 12, wherein the first weighting coefficient is a function of the second weighting coefficient.

14. (Amended) A filtering method according to Claim 13, wherein the first weighting coefficient is a function of the second weighting coefficient as follows:

$$\beta_{0,j} = m_j / \left(1 - 2 \sum_{i=0}^{j} \alpha_{0,j} \right)$$

where $\alpha_{0,j}$ designates the second weighting coefficient, $\beta_{0,j}$ designates the first weighting coefficient, i and j are integers, m_j is a value defined by a recurrence $m_0=(-1)^{L_0}$ and $m_j=-m_{j-1}$, and L_0 is a predetermined integer.

15. (Amended) A filtering method according to Claim 10, wherein, at each iteration, an odd-indexed sample adjacent to an even sample currently being modified is alternately a sample of rank immediately below or immediately above the adjacent even sample.

16. (Amended) A filtering method according to Claim 10, further comprising, prior to said iteration, an additional step of filtering that includes weighting by a third weighting coefficient.

17. (Amended) A filtering method according to Claim 16, wherein the third weighting coefficient is a function of the weighting coefficient used in the following step, as follows:

$$\gamma = -1 / \left(2\beta_{0,L_0-1} \right)$$

where γ designates the third weighting coefficient, L_0 is a predetermined parameter and β_{0,L_0-1} designates the weighting coefficient used in the following step.

18. (Amended) A filtering method according to Claim 10, wherein the digital output signal represents an image.

19. (Amended) A filtering method according to Claim 1 or 10, wherein said modification steps comprise applying an approximation function.

20. (Amended) A filtering method according to Claim 19, wherein the approximation function is an identity function.

21. (Amended) A filtering method according to Claim 19, wherein the approximation function is a function of a real variable which supplies the closest integer to the variable.

22. (Amended) A filtering method according to Claim 19, wherein the approximation function is a function of a real variable which supplies the first integer below the variable.

23. (Amended) A filtering method according to Claim 19, wherein the approximation function is a function of a real variable which supplies the first integer above the variable.

24. A filtering method according to Claim 19, wherein the approximation function is a function of a variable decomposed into sub-variables whose sum is equal to the variable, which supplies a sum of approximate values of the sub-variables, each of the approximate values of the sub-variables being (i) either a function of a real variable which supplies the integer closest to the variable, (ii) a function of a real variable which supplies the first integer below the variable, or (iii) a function of a real variable which supplies the first integer above the variable.

25. (Amended) A signal processing device, comprising means adapted to implement a filtering method according to Claim 1 or 10.

26. (Amended) A digital filtering device adapted to transform an input digital signal into one or more output digital signals containing even-indexed samples and odd-indexed samples, said filtering device comprising:

at least one weighting module; and

means for modifying even-indexed samples by a function of weighted odd-indexed samples,

wherein weighted samples are supplied by said at least one weighting module, said modification means functioning iteratively, so as to modify even-indexed samples at least once and then odd-indexed samples at least once, and said at least one weighting module receives as an input the difference between two consecutive even-indexed samples.

27. (Amended) A digital filtering device according to Claim 27, wherein said means for modifying odd-indexed samples is disposed downstream of said means for modifying even-indexed samples.

28. (Amended) A digital filtering device according to Claim 26 or 27, further comprising:

means for weighting, by a first weighting coefficient, at least one odd-indexed sample adjacent to an even sample currently being modified, so as to obtain a weighted odd-indexed sample;

means for modifying at least one even-indexed sample using at least one weighted odd-indexed sample;

means for weighting, by a second weighting coefficient, even-indexed samples adjacent to an odd sample currently being modified, so as to obtain weighted even-indexed samples; and

means for modifying at least one odd-indexed sample using the at least one weighted even-indexed sample.

29. (Amended) A digital filtering device according to Claim 28, wherein the second weighting coefficient is a function of the first weighting coefficient.

30. (Amended) A digital filtering device according to Claim 29, wherein the second weighting coefficient is a function of the first weighting coefficient as follows:

$$\beta_{0,j} = m_j / \left(1 - 2 \sum_{i=0}^{j} \alpha_{0,j} \right)$$

where α_{0j} designates the first weighting coefficient, β_{0j} designates the second weighting coefficient, i an j are integers, m_j is a value defined by a recurrence of $m_0=(-1)^{L_0}$ and $m_j=-m_{j-1}$, and L_0 is a predetermined integer.

31. (Amended) A digital filtering device according to Claim 26, wherein, at each iteration, an odd-indexed sample adjacent to an even sample currently being modified is alternatively the sample of rank immediately below or immediately above the adjacent even sample.

32. (Amended) A digital filtering device according to Claim 26, further comprising additional filtering means including means of weighting by a third weighting coefficient.

33. (Amended) A digital filtering device according to Claim 32, wherein the third weighting coefficient is a function of the weighting coefficient used upstream of said additional filtering means, as follows:

$$\gamma = -1 / \left(2\beta_{0,L_0-1} \right)$$

where γ designates the third weighting coefficient, L_0 is a predetermined parameter and β_{0,L_0-1} designates the weighting coefficient used upstream of said additional filtering means.

34. (Amended) A digital filtering device according to Claim 26, wherein the input digital signal represents an image.

35. (Amended) A digital filtering device adapted to transform one or more input digital signals into an output digital signal, the input signals containing even-indexed samples and odd-indexed samples, said filtering device comprising:

at least one weighting means;

means for modifying odd-indexed samples by a function of weighted even-indexed samples; and

means for modifying even-indexed samples by a function of weighted odd-indexed samples,

wherein said weighted samples are supplied by said at least one weighting means, said modification means functions iteratively, so as to modify odd-indexed samples at least once and then even-indexed samples at least once, and

wherein said at least one weighting means receives as an input the difference between two consecutive even-indexed samples.

36. (Amended) A digital filtering device according to Claim 35, wherein said means for modifying even-indexed samples is disposed downstream of said means for modifying odd-indexed samples.

37. (Amended) A digital filtering device according to Claims 35 or 36, further comprising:

means for weighting, by a first weighting coefficient, even-indexed samples adjacent to an odd sample currently being modified, so as to obtain weighted even-indexed samples;

means for modifying at least one odd-indexed sample using at least one weighted even-indexed sample;

means for weighting, by a second coefficient, at least one odd-indexed sample adjacent to an even sample currently being modified, so as to obtain a weighted odd-indexed sample; and

means for modifying at least one even-indexed sample using at least one weighted odd-indexed sample.

38. (Amended) A digital filtering device according to Claim 37, wherein the first weighting coefficient is a function of the second weighting coefficient.

39. (Amended) A digital filtering device according to Claim 38 wherein the first weighting coefficient is a function of the second weighting coefficient as follows:

$$\beta_{0,j} = m_j / \left(1 - 2 \sum_{i=0}^{j} \alpha_{0,j} \right)$$

where $\alpha_{0,j}$ designates the second weighting coefficient, $\beta_{0,j}$ designates the first weighting coefficient, i and j are integers, m_j is a value defined by a recurrence $m_0=(-1)^{L_0}$ and $m_j=-m_{j-1}$, and L_0 is a predetermined integer.

40. (Amended) A digital filtering device according to Claim 35, wherein, at each iteration, an odd-indexed sample adjacent to an even sample currently being modified is alternatively the sample of rank immediately below or immediately above the adjacent even sample.

41. (Amended) A digital filtering device according to Claim 35, further comprising additional filtering means including means for weighting by a third weighting coefficient.

42. (Amended) A digital filtering device according to Claim 41, wherein the third weighting coefficient is a function of the weighting coefficient used downstream of said additional filtering means, as follows:

$$\gamma = -1 / \left(2\beta_{0,L_0-1}\right)$$

where γ designates the third weighting coefficient, L_0 is a predetermined parameter and β_{0,L_0-1} designates the weighting coefficient used downstream of said additional filtering means.

43. (Amended) A digital filtering device according to Claim 35, wherein the digital output signal represents an image.

44. (Amended) A digital filtering device according to Claim 26 or 35, wherein said modification means has means for applying an approximation function.

45. (Amended) A digital filtering device according to Claim 44, wherein the approximation function is an identity function.

46. (Amended) A digital filtering device according to Claim 44, wherein the approximation function is a function of a real variable which supplies the integer closest to the variable.

47. (Amended) A digital filtering device according to Claim 44, wherein the approximation function is a function of a real variable which supplies the first integer below the variable.

48. (Amended) A digital filtering device according to Claim 44, wherein the approximation function is a function of a real variable which supplies the first integer above the variable.

49. (Amended) A digital filtering device according to Claim 44, wherein the approximation function is a function of a variable decomposed into sub-variables whose sum is equal to the variable, which supplies a sum of approximate values of the sub-variables, each of the approximate values of the sub-variables being either (i) a function of a real variable which supplies the integer closest to the variable, (ii) a function of a real variable which supplies a first integer below the variable, or (iii) a function of a real variable which supplies the first integer above the variable.

50. (Amended) A signal processing device comprising a digital filtering device according to Claim 26 or 35.

51. (Amended) A signal processing device comprising at least two digital filtering devices according to Claim 26 or 35, the output signal of one of the digital filtering devices being the input signal of the other digital filtering device.

52. (Amended) A digital apparatus comprising a signal processing device according to Claim 25.

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53. (Amended) A digital photographic apparatus comprising a signal processing device according to Claim 25.

54. (Amended) An encoding method comprising steps adapted to implement a filtering method according to Claim 1 or 10.

55. (Amended) An encoding device comprising at least one filtering device according to Claim 26 or 35.

56. (Amended) A digital compression method comprising steps adapted to implement a filtering method according to Claim 1 or 10.

57. (Amended) A digital signal compression device comprising at least one filtering device according to Claim 26 or 35.

58. (Amended) An information storage means which can be read by a computer or by a microprocessor, and which stores a program, comprising means adapted to implement a filtering method according to Claim 1 or 10.

59. (Amended) A computer program product comprising code for implementing a filtering method according to Claim 1 or 35.

Please add new Claims 60-63.

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60. (New) A digital apparatus comprising a signal processing device according to Claim 50.

61. (New) A digital photographic apparatus comprising a signal processing device according to Claim 50.

62. (New) A digital apparatus comprising a signal processing device according to Claim 51.

63. (New) A digital photographic apparatus comprising a signal processing device according to Claim 51.

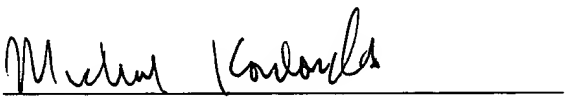
REMARKS

Claims 1-63 are now pending in the application, with Claims 1, 10, 26 and 35 being independent. Claims 1-59 have been amended to more clearly describe Applicant's invention. Claims 60-63 have been added to afford Applicant a fuller scope of protection. No new matter has been entered.

Favorable consideration and early examination on the merits are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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